



Introduction

Congratulations on being selected for the robotics/microcontroller workshop! We look forward to seeing your work throughout the challenges we've made for you. Before you arrive on Monday, there are two softwares you will need to install on your working laptops to use throughout the workshop: **Fusion 360** and the **Arduino IDE**. If you run into any issues that you cannot figure out yourself, arrive a few minutes early so we can assist you before the workshop begins.

Download Fusion 360

Without spoiling too much of the workshop, one of the softwares you will be using is Fusion 360, a computer aided design (CAD) tool for 3D modeling. We will be teaching you how to use the software, so no need to start learning in advance but if you're curious by all means go ahead 😊. To install it, you can visit the UofT library website that lists all the [available licenses/softwares for students](#). Once there, follow the link for AutoCAD/AutoDesk. It says the software only works for Windows, but *Fusion 360 does run on Mac* so no need to worry about that. Go to the [AutoDesk Educators website](#) and click Get Products.

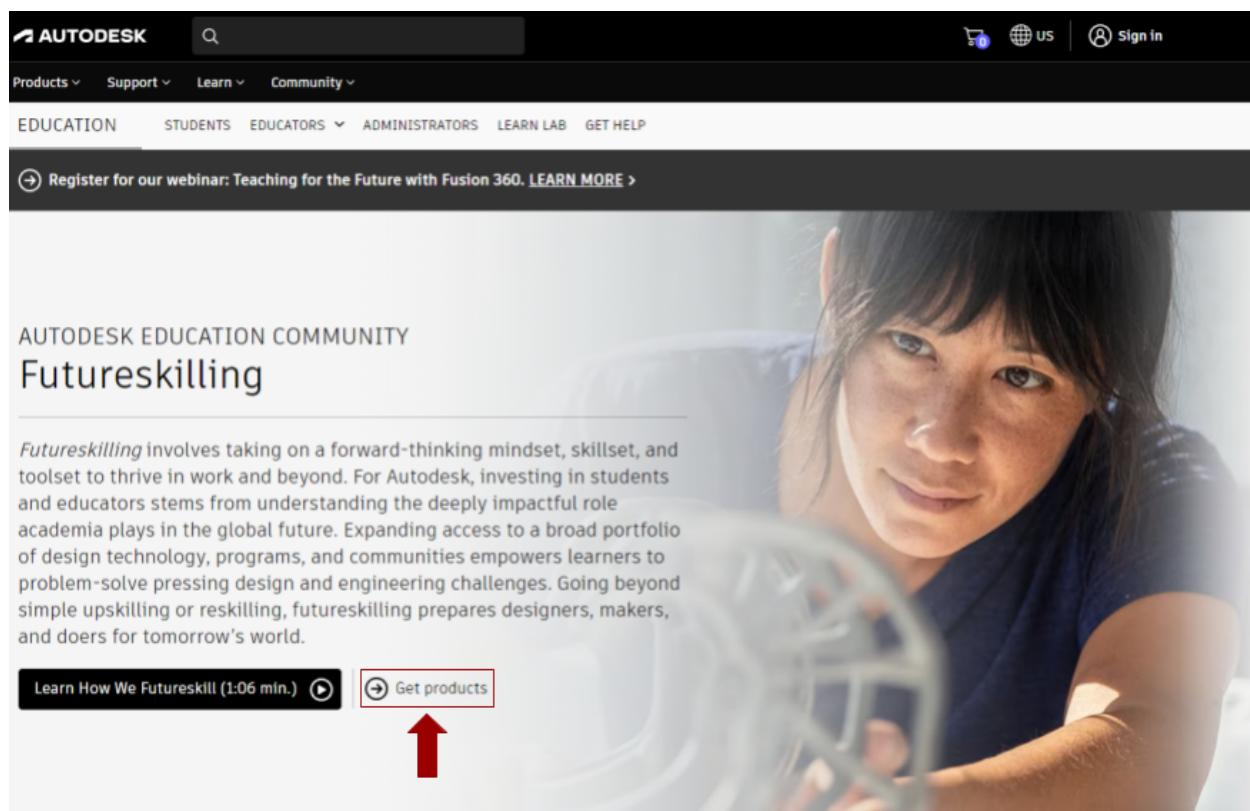


Figure 1. Autodesk Educators Website Landing Page



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From here, you should see a list of all the available products from AutoDesk. Navigate to **Fusion 360** and click **Get Started**.

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 Tinkercad Simple 3D design and 3D printing app Platform:  Get started >	 Fusion 360 Software or Browser Access Cloud-based CAD, CAM, CAE, and PCB software. Continue for access, then install Fusion 360 (multiple languages available) or run Fusion 360 from fusion.online.autodesk.com Platform:    Get started > 	 Revit Plan, design, construct, and manage buildings with powerful tools for Building Information Modeling. Platform:  Get started >	 Revit Revit Generative Design Note: this product requires Autodesk Revit 2021. Quickly generate design alternatives based on your goals, constraints, and inputs to give you higher-performing options for data-driven decision making. Platform:  Get started >
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Figure 2. Fusion 360 Product Screen

You'll then be prompted to create an account. Select "Student" as your educational role and fill in all the necessary account information . To be safe, use your UofT email rather than a personal one to avoid potential licensing issues. Once completed, you'll get a verification email; follow the steps outlined in the email.



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Once you've verified your account, return to the products page and navigate to Fusion 360 again and click **Get Started**. You will be prompted to fill out information about the school such as enrollment graduation dates. For simplicity, you can list them as Sept. 1 20xx and Jun. 1, 20xx.

First name

Last name

Country or region of your educational institution

Institution type

Name of educational institution

Date of birth

Please include your enrollment and graduation dates. This information does not affect your eligibility for educational access to Autodesk products.

Enrollment date

Graduation date

CONFIRM > **Cancel**

Figure 3. School Information Form

The website may prompt you to complete the form in an Incognito window. We're not entirely sure what the reason is but you can continue all of the following steps in that new window.

Once the form is complete, you'll be redirected to the product page again. Navigate to Fusion 360 and press **Get Started** and **Access**. The app should automatically begin downloading, if not follow the prompts on the webpage. Open the .exe or .dmg download and install the app however you'd like. Finally, sign in with the account created previously.



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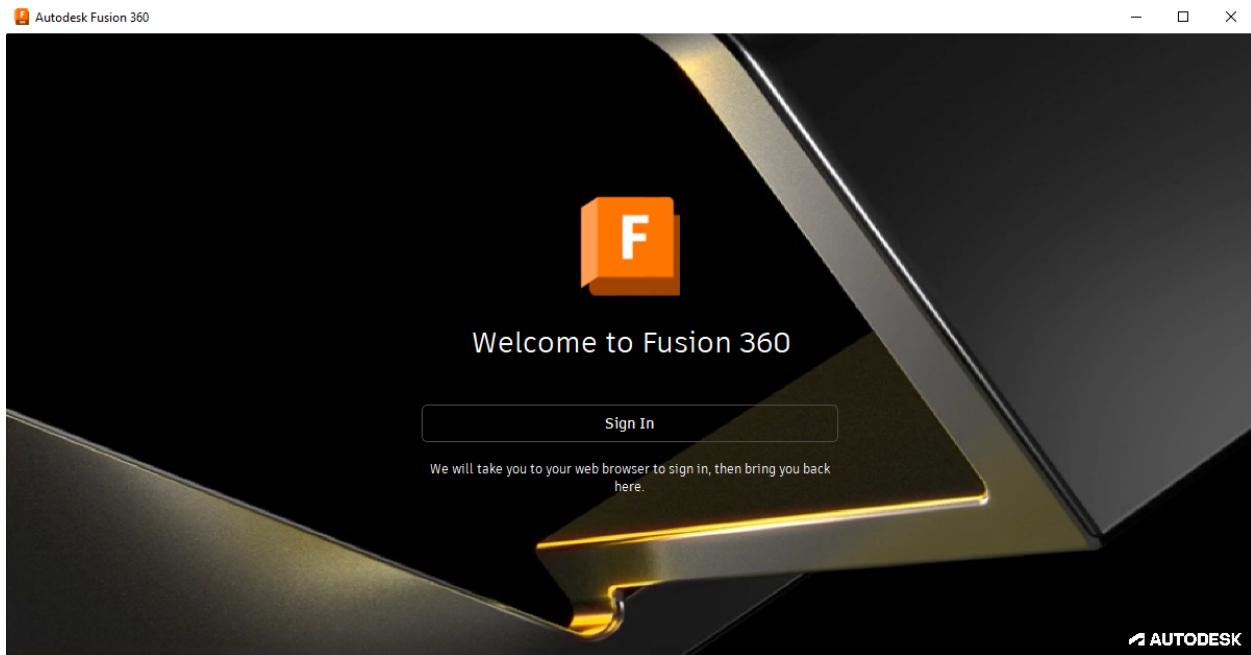


Figure 4. Fusion 360 App Login Screen

When you sign in, you will be asked to create a **team**. Name it whatever you like, but ideally something descriptive (Ex: “ECE-Robotics-Workshop”).

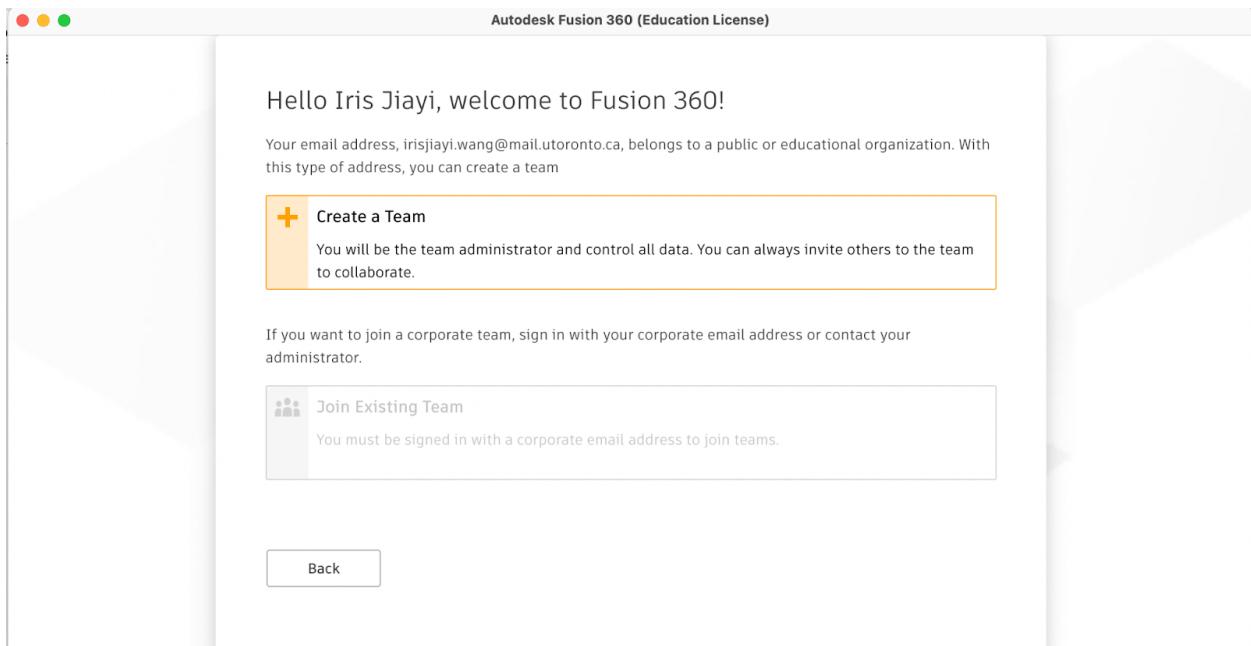


Figure 5. Creating a Team in Fusion 360



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You'll then be prompted about your team's discovery settings. Select option 1 ("Do not allow discovery") so that your team is private. You can still send invites later. Finally, you'll be asked about notifications, configure them however you like.

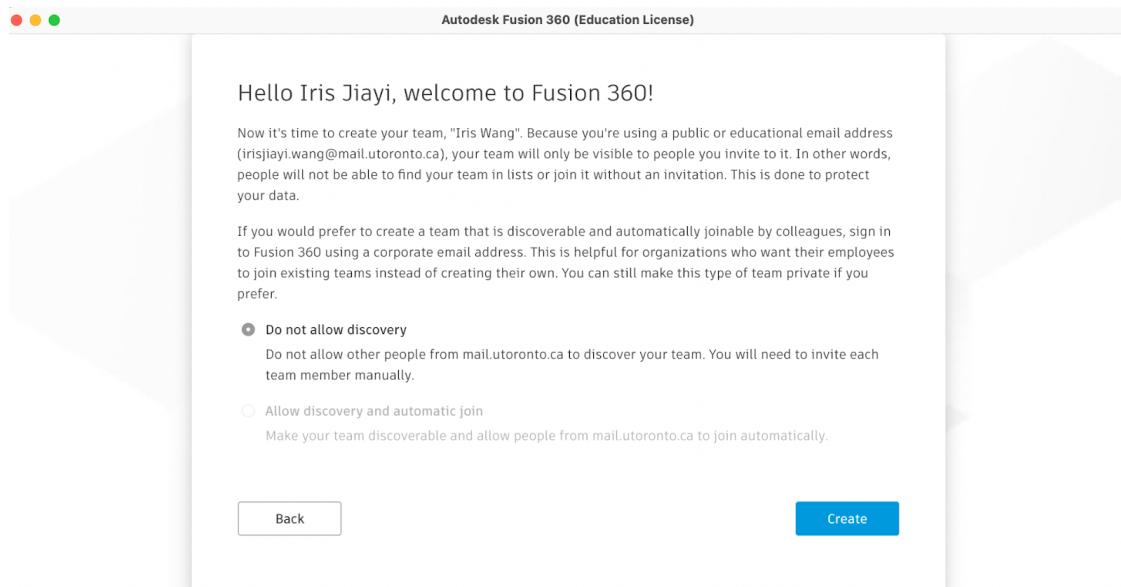


Figure 6. Team Discovery Settings

Once the app opens, you'll be on a new untitled design file as depicted below. No need to worry about this now, this will be discussed in **Activity 1: Learning How to CAD Components**. Press the button in the top left to open your file directory and create a new project. All of the activities will be conducted in this project so name it accordingly (you will only need one project for all of the activities).

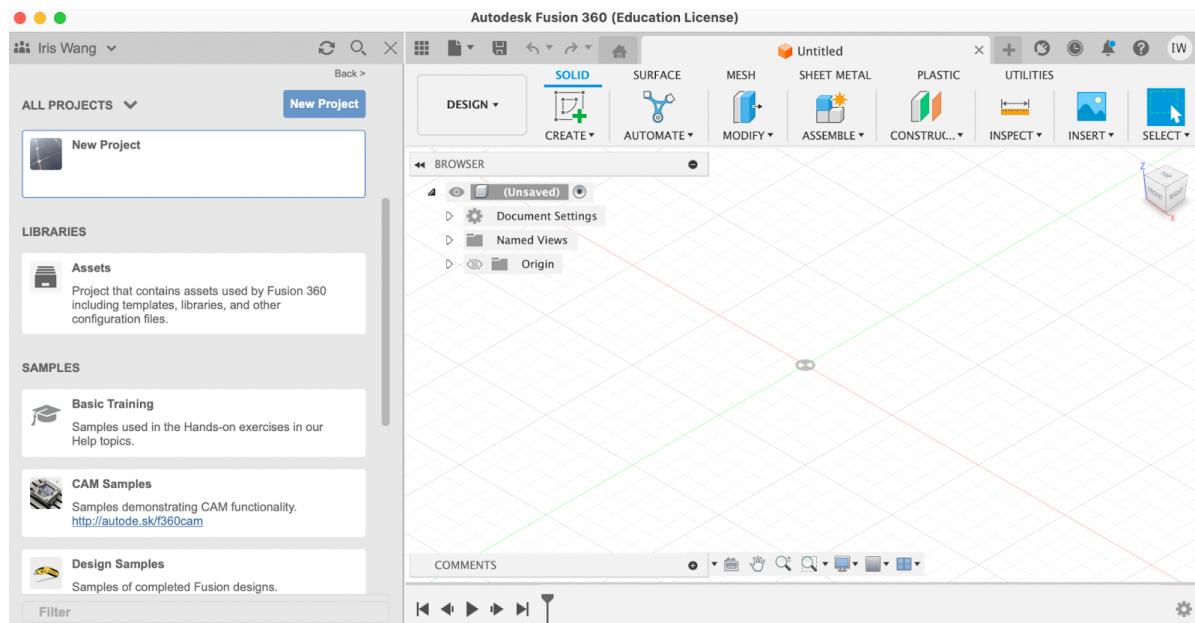


Figure 7. Fusion 360 Startup Screen with File Directory



Now your Fusion 360 workspace is ready for the workshop. While not mandatory, we highly recommend using a mouse when working in Fusion, it makes controlling the camera much easier. Everything in Fusion can be done with a trackpad so if you don't have a mouse no need to worry. Unfortunately, we won't be providing each workstation a mouse.

Downloading Arduino IDE

To download and install the IDE, simply follow the instructions on the [Arduino download page](#). Make sure you remember where you installed the application so you can find your files on your laptop later. The remaining setup (ie. installing libraries) will be done during activities.

Other Equipment

On the software side, you're now ready for the workshop, but there are a few equipment pieces you will need to bring:

- Bring your laptop charger, as Fusion 360 drains a lot of battery. Power bars will be available to all teams
- For Mac users, make sure you can connect USB-A cables to your laptop, as the cable used to program the microcontroller needs to connect to a USB-A



Figure 8. USB-C to USB-A Adapter

- If you have one, bring a mouse to make camera control in Fusion easier

Conclusion

You're now set for the robotics workshop! We look forward to seeing you on Monday.